

The Efficacy of A Language-based Training Program as a Phoniatriac Approach for Remediation of Egyptian Learning-Disabled Children

A Thesis

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بسم الله الرحمن الرحيم

اقرأ باسم ربك الذي خلق (١) خلق

الإنسان من علق (٢) اقرأ وربك

الأكرم (٣) الذي علم بالقلم (٤)

علم الإنسان ما لم يعلم (٥)

صدق الله العظيم

سورة العلق

(الآيات من ١ إلى ٥)

**THIS WORK
IS
LOVELY
DEDICATED
TO *MY PARENTS***



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List of Abbreviations

- ADHD= Attention Deficit Hyperactivity Disorder.
- AIT= Auditory integration training.
- C.A.= Chronological age.
- CAPD= Central auditory processing disorder.
- CELF= Clinical Evaluation of Language Fundamentals.
- CTOPP= Comprehensive Test of Phonological Processing.
- C-V= Consonant-Vowel.
- C-V-C= Consonant-Vowel-Consonant.
- DART= Direct Access Reading Technique.
- DTI= Diffusion tensor imaging.
- EEG= Electroencephalogram.
- EP= Evoked Potential.
- fMRI= Functional Magnetic Resonance Imaging.
- IQ= Intelligence Quotient.
- LDs= Learning disabilities.
- M.A.= Mental age.
- MLD= Masking Level Difference.
- MRI= Magnetic Resonance Imaging.
- MRS= Magnetic Resonance Spectroscopy.
- NIM= Neurological Impress Method.

- PA= Phonological awareness.
- PACT = Parent And Children Together.
- PET= Positron Emission Tomography.
- PPVT= Peabody Picture Vocabulary Test.
- QEEG= Quantitative EEG.
- RA= Reading Achievement.
- REA = Reading expectancy age.
- RTI= Response to Intervention.
- SPIN= Speech-Intelligibility-In-Noise.
- TOPA-K= Test of Phonological Awareness-Kindergarten.
- TOVA= Test of Variables of Attention.
- TWF= Test of Word Finding.
- VAKT= visual, auditory, kinesthetic, tactile.
- VMI= Visual-Motor Integration.
- WCPM= Words read Correctly Per Minute.
- WF= Word finding.



Introduction

Learning disabilities is a generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction (***National Joint Committee on Learning Disabilities, 1998***).

Little (1999) broadly classified learning disabilities into three main subtypes:

1- Language-based learning disabilities:

These include any disabilities that affect language including problems in reading, spelling, and written composition. They are due to auditory-verbal processing difficulties. Broadly, reading disorders fall into two types: disorders of decoding and word identification at the word level (dyslexia); and disorders of reading comprehension that affect both single word and text comprehension (sometimes termed hyperlexia).

Dyslexia is probably the most well known language-based learning disability, and may be the most common. Often dyslexia is a part of a larger learning disability.

2- *Non-verbal learning disability (also called "right-hemisphere learning disorders"):*

It includes a cluster of neuropsychological, academic, and social-emotional characteristics that reflects primary deficiencies in non-verbal reasoning. They are due to visual, perceptual and motor processing difficulties.

3- *Learning disabilities that affect executive functions:*

Executive Functions include: Organization (attention, decision-making, planning, sequencing, problem solving), Regulation (initiation of action, self-control, self-regulation) and Working memory (*Gioia et al., 2002*).

From the Phoniatric point of view, *Supple (2000)* categorized language-based learning disabilities into:

- (1) Lower order process disorders: including phonological awareness deficits and sound production deficits.
- (2) Higher order process disorders: including vocabulary deficit (including word finding difficulty), semantic deficit and syntactic deficit.

The causes for learning disabilities are not well understood, and sometimes there is no apparent cause for a learning disability. However, some neuroanatomical and neurophysiological deficits have been reported in the brain in developmental dyslexia (*Rae et al., 1998*). Although reading development is influenced by numerous factors, compelling scientific and educational research has

documented the fact that phonological awareness is key to the process of learning to read and is a reliable predictor of later reading skill (*Holopainen et al., 2001; Lane et al., 2002*).

It is advisable to detect learning disabilities at an early age in order to provide appropriate educational interventions and behavioral therapy to optimize learning and prevent secondary emotional problems (*Bashir and Scavuzzo, 1992*).

Interventions need to be aimed at the specific needs of the child. No two children share the same set of strengths or areas of weaknesses. An effective intervention is one that utilizes a child's strengths in order to build on the specific areas in need of development (*National Joint Committee on Learning Disabilities, 2006*).

Management of dyslexic children can be divided into:

1- Therapeutic interventions: These can be subdivided into:

A) *Language-based interventions.* These include: the synthetic phonics approach, the whole-word approach, the language experience approach, the balanced Literacy approach, the Direct Access Reading Technique, the multisensory approach, in addition to reading comprehension support and instructional techniques for building reading fluency.

The best known multisensory method for remediation of dyslexia is the Orton-Gillingham method (**Orton, 1937**). Several commercial programs, mostly based on the Orton-Gillingham approach, are available. The majority of these programs, however, have undergone only simple, quasi-scientific efficacy studies showing that if the program is implemented by a skilled teacher, students make significant progress (**Hall and Moats, 2002**).

B) Non-linguistic interventions. These include treatments targeting auditory processing, treatments involving the visual system and treatments related to the cerebellar or motor system. A variety of treatments have been offered commercially in the absence of solid empirical research support for their efficacy. Other non-Validated or controversial treatment approaches for dyslexia include: dietary treatments, sensory integration therapy, medications and others (**Lam, 2001**).

2-Accommodations and compensatory strategies: These include accommodations for visual processing disorders and accommodations for auditory processing disorders.

Based on **Supple** categorization of language-based learning disabilities (**Supple, 2000**), remediation of these disabilities (including dyslexia) can be achieved by the following language-based program: